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Editorial

A New Prognostic Tool for Korean Patients with Acute Myocardial Infarction

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▸ See the article "Risk Scoring System to Assess Outcomes in Patients Treated with Contemporary Guideline-Adherent Optimal Therapies after Acute Myocardial Infarction" in volume 48 on page 492.

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Cardiovascular diseases (CVDs), especially acute myocardial infarction (AMI), are among the leading causes of morbidity and mortality worldwide.[1] Therefore, prediction of developing AMI in the general population and prediction of prognosis in patients with AMI are ongoing areas of research.[2] The first challenge faced by precision medicine in CVD is to identify individuals at high risk for AMI and to seek personalized prevention strategies.[3] However, predicting mortality or recurrence in patients who have already developed AMI is no less important. Since patients who survive AMI are at risk of developing another cardiac event or death, we need to identify high-risk AMI patients and employ aggressive prevention strategies in these individuals.

An increasing number of studies have sought to predict CVD in the Korean population[4-6] and to predict prognosis in Korean patients with AMI.[7-9] In this issue of the *Korean Circulation Journal*, Song et al.[10] reports a new risk score, the Korea Working Group in Myocardial Infarction (KorMI) system, to predict one-year adverse outcomes among AMI patients being treated with guideline-adherent optimal therapies. The newly-developed KorMI system is based on 10 predictors, including left ventricular systolic dysfunction, type of stent used, Killip classification, renal insufficiency, history of stroke, regional wall motion on echocardiography, body mass index, patient age, prior coronary heart disease, and the presence of diabetes mellitus. The KorMI system has shown good discrimination performance and better prediction performance compared to the previously reported Assessment of Pexelizumab in Acute Myocardial Infarction (APEX AMI), Controlled Abciximab and Device Investigation to Lower Late Angioplasty Complications (CADILLAC), and Global Registry of Acute Coronary Events (GRACE) scores. A notable feature of this new prediction system is that it is not intended for use in a wide range of AMI patients, but was developed only for use in patients receiving optimal therapies according to the contemporary guidelines. A significant number of patients with AMI are not receiving optimal therapies for many reasons, and they are likely to have a poor prognosis compared to optimally-treated patients. However, predicting adverse outcomes is important even among patients receiving guideline-adherent therapies because they do not have the same risk of recurrence or mortality. This kind of approach has a disadvantage in that it cannot be applied to all patients on various spectrums, but it does enable more accurate risk classification within a targeted population of patients. This narrow targeting approach will become more and more common

in the era of precision medicine, which focuses on personalized prediction, prevention and treatment for smaller groups or individuals.[3]

The KorMI system, as acknowledged by authors, has not been validated with external datasets, so the reported prediction performance might be over-optimistic.[10] Validation of the KorMI system through external datasets is clearly needed. Improvement of the system to predict longer-term prognosis would also be useful, since the current version predicts only one-year adverse outcomes. These limitations not only affect the KorMI system. Many of CVD-predictive and -prognostic tools are of limited clinical use for the same reasons.[2] Lack of external validation and short follow-up periods are common shortcomings of Korean studies, since we do not have abundant long-term follow-up data. It is essential to construct a better Korean dataset that will be relevant, representative and include thorough follow-up. Sufficient epidemiological and clinical data are essential to the development of clinically useful models that will predict the risk and prognosis of CVD.

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